WR File NR G1-28736
WR Doc ID: 5358264

DEPARTMENT OF ECOLOGY
State of Washington

State of Washington
DRAFT
Report of Examination for Water Right

PRIORITY DATE	WATER RIGHT NUMBER
August 17, 2012	G1-28736

MAILING ADDRESS	SITE ADDRESS (IF DIFFERENT)
Middlefield LLC **2208 NW Market Street, Suite 507** **Seattle, WA 98107**	**7363 Weaver Road NW** **Bainbridge Island, WA 98110**

Total Quantity Authorized for Withdrawal or Diversion

WITHDRAWAL OR DIVERSION RATE	UNITS	ANNUAL QUANTITY (AF/YR)
90	GPM	13.3

Purpose

	WITHDRAWAL OR DIVERSION RATE			ANNUAL QUANTITY (AF/YR)		
PURPOSE	ADDITIVE	NON-ADDITIVE	UNITS	ADDITIVE	NON-ADDITIVE	PERIOD OF USE (mm/dd)
Irrigation	90		GPM	11		4/1 to 9/30
Irrigation	90		GPM	2.3		10/1 to 3/30

REMARKS

IRRIGATED ACRES		PUBLIC WATER SYSTEM INFORMATION	
ADDITIVE	NON-ADDITIVE	WATER SYSTEM ID	CONNECTIONS
8			

Source Location

COUNTY	WATERBODY	TRIBUTARY TO	WATER RESOURCE INVENTORY AREA
Kitsap	Groundwater		15 - Kitsap

SOURCE FACILITY/DEVICE	PARCEL	WELL TAG	TWN	RNG	SEC	QQ Q	LATITUDE	LONGITUDE
Well	272502-2-079-2006		25N	02E	27	SE NW	47.62987	-122.53242

Datum: NAD83/WGS84

Place of Use (See Attached Map)

PARCELS (NOT LISTED FOR SERVICE AREAS)

272502-2-079-2006

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE

RESULTANT PARCEL A OF SURVEY RECORDED IN VOLUME 66 OF SURVEYS, PAGE 208, UNDER AUDITOR'S FILE NO. 200609010141 AND REFERENCED UNDER AUDITOR'S FILE NOS. 200609010117 & 200609070065, RECORDS OF KITSAP COUNTY, WASHINGTON, DESCRIBED AS FOLLOWS: THE SOUTH HALF, NORTHEAST QUARTER, SOUTHEAST QUARTER, NORTHWEST QUARTER, THE NORTH 4 ACRES OF THE SOUTHEAST QUARTER, SOUTHEAST QUARTER, NORTHWEST QUARTER AND THE SOUTH THREE-FIFTHS OF THE SOUTHEAST QUARTER, SOUTHEAST QUARTER, NORTHWEST QUARTER EXCEPT THE WEST 150* OF SAID SOUTH THREE-FIFTHS, EXCEPT FOR ROAD RIGHT-OF-WAY OVER THE EAST AND SOUTH 30* OF THE ABOVE ALL SITUATED WITHIN SECTION 27, TOWNSHIP 25 NORTH, RANGE 2 EAST, W.M., KITSAP COUNTY, WASHINGTON, MORE PARTICULARLY DESCRIBED AS FOLLOWS: BEGINNING AT THE NORTH QUARTER CORNER OF SAID SECTION 27; THENCE SOUTH1*00'07" WEST 2656.02 FEET TO THE CENTER OF SAID SECTION 27 (ALSO BEING THE SOUTHEAST CORNER OF SAID SOUTHEAST QUARTER OF THE NORTHWEST QUARTER); THENCE NORTH 1*00'07" EAST 30.00 FEET; THENCE RUNNING PARALLEL WITH THE SOUTH LINE OF SAID SOUTHEAST QUARTER OF THE NORTHWEST QUARTER, NORTH 87*57'19" WEST 30.00 FEET TO THE TRUE POINT OF BEGINNING ON THE WESTERLY RIGHT-OF-WAY OF WEAVER ROAD NORTHEAST; THENCE CONTINUING NORTH 87*57'19" WEST ALONG THE NORTHERLY RIGHT-OF-WAY OF NORTHEAST WYATT WAY, 481.50 FEET; THENCE LEAVING SAID RIGHT-OF-WAY AND RUNNING PARALLEL WITH AND 150 FEET EAST OF THE WEST LINE OF THE EAST HALF OF SAID SOUTHEAST QUARTER OF THE NORTHWEST QUARTER, NORTH 1*01'26" EAST 365.18 FEET TO THE NORTH LINE OF THE SOUTH THREE-FIFTHS OF THE SOUTHEAST QUARTER OF SAID SOUTHEAST QUARTER OF THE NORTHWEST QUARTER; THENCE ALONG SAID NORTH LINE NORTH 87*57'19" WEST 150.02 FEET TO THE WEST LINE OF THE EAST HALF OF SAID SOUTHEAST QUARTER OF THE NORTHWEST QUARTER; THENCE ALONG SAID WEST LINE NORTH 1*01'26" EAST 401.39 FEET; THENCE SOUTH 87*54'22" EAST 200.00 FEET; THENCE NORTH 1*01'26" EAST 200.00 FEET TO POINT "A" ON THE NORTH LINE OF SAID SOUTH THREE-QUARTERS OF THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER; THENCE ALONG SAID LINE SOUTH 87*54'22" EAST 431.17 FEET TO POINT "B" ON THE WESTERLY RIGHT-OF-WAY OF WEAVER ROAD NORTHEAST; THENCE ALONG SAID RIGHT-OF-WAY RUNNING PARALLEL WITH AND 30 FEET WEST OF THE EAST LINE OF SAID SOUTH THREE-QUARTERS OF THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER, SOUTH 1*01'07" WEST 966.04 FEET TO THE TRUE POINT OF BEGINNING; TOGETHER WITH ANY FEE TITLE INTEREST WHICH MAY EXIST WITHIN THE RIGHT-OF-WAY FOR SAID WYATT WAY AND WEAVER ROAD. SUBJECT TO AND TOGETHER WITH A 20 FOOT ACCESS AND UTILITY EASEMENT, THE CENTERLINE OF WHICH RUNS FROM SAID POINT "A" TO SAID POINT "B" AND CONTINUING NORTH 87*54'22" WEST 20.00 TO THE TERMINUS PER AUDITOR'S FILE NUMBER 200606200332.

Proposed Works

Well and irrigation system (drip-tape with mulch cover)

Development Schedule

BEGIN PROJECT	COMPLETE PROJECT	PUT WATER TO FULL USE
Begun	**December 31, 2018**	**December 31, 2023**

Measurement of Water Use

How often must water use be measured?	Monthly
How often must water use data be reported to Ecology?	Annually and upon request by Ecology
What volume should be reported?	Total Annual Volume
What rate should be reported?	Rate of Withdrawal (gpm)

Provisions

Family Farm Irrigation

This authorization to use public waters of the state is classified as Family Farm Permit in accordance with chapter 90.66 RCW. This means the land being irrigated under this authorization shall comply with the following definition: Family Farm - a geographic area including not more than 6,000 acres of irrigated agricultural lands, whether contiguous or noncontiguous, the controlling interest in which is held by a person having a controlling interest in no more than 6,000 acres of irrigated agricultural lands in the state of Washington which are irrigated under water rights acquired after December 8, 1977. Furthermore, the land being irrigated under this authorization must continue to conform to the definition of a family farm.

Family Farm Development Permit

This authorization to use public waters of the state is classified as a Family Farm Development Permit in accordance with Chapter 90.66 RCW. Whenever an interest in this land is transferred by the holder of this Family Farm Development Permit to a person who can qualify for a Family Farm Permit, the Department shall issue a Family Farm Permit upon request.

Wells, Well Logs and Well Construction Standards

All wells constructed in the state must meet the construction requirements of WAC 173-160 titled "Minimum Standards for the Construction and Maintenance of Wells" and RCW 18.104 titled "Water Well Construction". Any well which is unusable, abandoned, or whose use has been permanently discontinued, or which is in such disrepair that its continued use is impractical or is an environmental, safety or public health hazard must be decommissioned.

Flowing wells must be constructed and equipped with valves to ensure that the flow of water can be completely stopped when not in use. Likewise, the well must be continuously maintained to prevent the waste of water through leaky casings, pipes, fittings, valves, or pumps -- either above or below land surface.

The well must be capped upon completion, and the Department of Ecology must be notified in order that a video scan of the completed well can be conducted. The Department of Ecology must be notified within one week of completion of the well and prior to the setting of a pump, in order to make necessary arrangements for video scanning.

All wells must be tagged with a Department of Ecology unique well identification number. If you have an existing well and it does not have a tag, please contact the well-drilling coordinator at the regional Department of Ecology office issuing this decision. This tag must remain attached to the well. If you are required to submit water measuring reports, reference this tag number.

Installation and maintenance of an access port as described in WAC 173-160- 291(3) is required.

In addition to the required access port, the applicant must install and maintain, in operating condition, an airline and pressure gage. The pressure gage must be equipped with a standard tire valve and placed in a location accessible to Department of Ecology personnel. The airline must extend from land surface to the top of the pump bowls and the total airline length must be reported to the Department of Ecology upon completion of the pump system.

Well Consolidation
Exempt wells associated with properties involved in exempt right consolidations under this ground water right must be decommissioned in accordance with RCW 18.104 and WAC 173-160-381 upon hooking up to a public water system. Legally enforceable agreements prohibiting the construction of future exempt wells to serve the properties involved in exempt well consolidations must be submitted to the Region. Appropriate binding limitations must be placed on the titles to these properties to ensure applicability to subsequent land owners.

Measurements, Monitoring, Metering and Reporting
An approved measuring device must be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", WAC 173-173.

Department of Ecology personnel, upon presentation of proper credentials, must have access at reasonable times, to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.

WAC 173-173 describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition the Department of Ecology for modifications to some of the requirements.

Water Level Measurements
In order to maintain a sustainable supply of water, pumping must be managed so that static water levels do not progressively decline from year to year. Static water level is defined as the water level in a well when no pumping is occurring and the water level has fully recovered from previous pumping. Static water levels must be measured and recorded monthly, using a consistent methodology. Data for the previous year must be submitted by January 31 to the Department of Ecology.

Static water level data must be submitted in digital format and must include the following elements:

- Unique Well ID Number
- Measurement date and time
- Measurement method (air line, electric tape, pressure transducer, etc.)
- Measurement accuracy (to nearest foot, tenth of foot, etc.)
- Description of the measuring point (top of casing, sounding tube, etc.)
- Measuring point elevation above or below land surface to the nearest 0.1 foot
- Land surface elevation at the well head to the nearest foot.
- Static water level below measuring point to the nearest 0.1 foot.

Water Use Efficiency
Use of water under this authorization will be contingent upon the water right holder's maintenance of efficient water delivery systems and use of up-to-date water conservation practices consistent with established regulation requirements and facility capabilities.

Non-Additive to Confirmed Claims
The water use authorized under this filing will be considered non-additive to any water rights of the same purpose (irrigation) confirmed for said claim as a result of a general adjudication through Superior Court, should adjudication be undertaken.

Proof of Appropriation
The water right holder must file the notice of Proof of Appropriation of water (under which the certificate of water right is issued) when the permanent distribution system has been constructed and the quantity of water required by the project has been put to full beneficial use. The certificate will reflect the extent of the project perfected within the limitations of the superseding permit. Elements of a proof inspection may include, as appropriate, the source(s), system instantaneous capacity, beneficial use(s), annual quantity, place of use, and satisfaction of provisions.

Schedule and Inspections
Department of Ecology personnel, upon presentation of proper credentials, will have access at reasonable times, to the project location, and to inspect at reasonable times, records of water use, wells, diversions, measuring devices and associated distribution systems for compliance with water law.

Real Estate Excise Tax
This decision may indicate a Real Estate Excise Tax liability for the seller of water rights. The Department of Revenue has requested notification of potentially taxable water right related actions, and therefore will be given notice of this decision, including document copies. Please contact the state Department of Revenue to obtain specific requirements for your project. Phone: (360) 570-3265. The mailing address is: Department of Revenue, Real Estate Excise Tax, PO Box 47477, Olympia WA 98504-7477 Internet: http://dor.wa.gov/. E-mail: REETSP@DOR.WA.GOV.

Findings of Facts
Upon reviewing the investigator's report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I concur with the investigator that water is available from the source in question; that there will be no impairment of existing rights; that the purpose(s) of use are beneficial; and that there will be no detriment to the public interest.

Therefore, I ORDER approval of Application No. G1-28736, for 90 gpm and 13.3 acre-feet annually for the purposes of irrigation, subject to existing rights and the provisions specified above.

Your Right To Appeal

You have a right to appeal this Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do the following within 30 days of the date of receipt of the Order.

File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.

- Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

- You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503 **Pollution Control Hearings Board** 1111 Israel RD SW Ste 301 Tumwater, WA 98501	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608 **Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

Signed at Bellevue, Washington, this _____ day of _____ 2013.

_____

Jacqueline Klug, Section Manager
Water Resources Program

For additional information visit the Environmental Hearings Office Website: http://www.eho.wa.gov. To find laws and agency rules visit the Washington State Legislature Website: http://www1.leg.wa.gov/CodeReviser.

INVESTIGATOR'S REPORT
Application for Water Right – Middlefield LLC
Water Right Control Number G1-28736
Doug Wood, Department of Ecology

BACKGROUND

This report serves as the written findings of fact concerning Water Right Application Number G1-28736.

Cost Reimbursement

This application was processed under a cost reimbursement agreement between the applicant and the Department of Ecology. The report was prepared by Robinson Noble, Inc. under Ecology cost reimbursement contract C1000191. The work assignment for this project was authorized by Ecology on March 14, 2013.

Project Description

The Department of Ecology received the application from Middlefield LLC on August 10, 2012. The applicant requested a new water right to support agricultural irrigation use at a farm on Bainbridge Island. The proposed source will be a new groundwater well. The applicant proposes to seasonally irrigate eight acres of land at a maximum rate of 90 gpm and 13.3 acre-feet per year as noted below.

Table 1 Summary of Requested Water Right

Applicant Name:	**Middlefield LLC**
Date of Application:	8/17/2012
Place of Use	See legal description on page 2

County	Waterbody	Tributary To	WRIA
Kitsap	Groundwater		15-Kitsap

Purpose	Rate	Unit	Ac-ft/yr	Begin Season	End Season
Irrigation	90	GPM	11	April 1	September 30
			2.3	October 1	March 30

Source Name	Parcel	Well Tag	Twp	Rng	Sec	QQ Q	Latitude	Longitude
Well	272502-2-079-2006		25N	02E	27	SE NW	47.62987	-122.53242

CFS = Cubic Feet per Second; Ac-ft/yr = Acre-feet per year; Sec. = Section; QQ Q = Quarter-quarter of a section; WRIA = Water Resource Inventory Area; E.W.M. = East of the Willamette Meridian; Datum: NAD83/WGS84.

Legal Requirements for Approval of Appropriation of Water

Public Notice

RCW 90.03.280 requires that notice of a water right application be published once a week, for two consecutive weeks, in a newspaper of general circulation in the county or counties where the water is to

be stored, diverted and used. Notice of this application was published in the Kitsap Sun on November 23 and November 30, 2012.

Consultation with the Department of Fish and Wildlife

The Department must give notice to the Department of Fish and Wildlife of applications to divert, withdraw or store water. Robinson Noble sent an email on April 17, 2013 to Mr. Steve Boessow of the Washington State Department of Fish and Wildlife (WDFW) to determine if WDFW had any issues or concerns regarding the proposed application. No response was received from WDFW as of August 5, 2013.

State Environmental Policy Act (SEPA)

A water right application is subject to a SEPA threshold determination (i.e., an evaluation whether there are likely to be significant adverse environmental impacts) if any one of the following conditions are met.

(a) It is a surface water right application for more than 1 cubic foot per second, unless that project is for agricultural irrigation, in which case the threshold is increased to 50 cubic feet per second, so long as that irrigation project will not receive public subsidies;
(b) It is a groundwater right application for more than 2,250 gallons per minute;
(c) It is an application that, in combination with other water right applications for the same project, collectively exceed the amounts above;
(d) It is a part of a larger proposal that is subject to SEPA for other reasons (e.g., the need to obtain other permits that are not exempt from SEPA);
(e) It is part of a series of exempt actions that, together, trigger the need to do a threshold determination, as defined under WAC 197-11-305.

Because this application does not meet any of these conditions, it is categorically exempt from SEPA and a threshold determination is not required.

INVESTIGATION

Site Visit

Robinson Noble hydrogeologist Burt G. Clothier, L.HG. conducted a site visit on April 2, 2013. Also present was Ryan Vancil of Vancil Law Offices PLLC, representing the applicant. The property representing the place of use and the proposed place of withdrawal were inspected. Additional information regarding the project was provided by the applicant following the field visit.

The Middlefield Farm has an existing 6-inch diameter domestic-use well with a submersible pump. At the time of a well test performed in 2012, the test pumping contractor reported a depth of 97 feet. No well log has been identified for this well. Anecdotal information from the applicant suggests the well was installed in the 1940s.

Proposed Use and Basis of Water Demand

The application requests a withdrawal of 90 gallons per minute from a new well located on Bainbridge Island in Kitsap County. The withdrawal is proposed for use seasonally to irrigate crops. An existing well is also present on the property.

The applicant states the farm will be used to produce a wide variety of row-crop food products. Production will be year-round according to what crops can grow in which seasons, using production methods that can be supplemented by growing in the greenhouses. Crops will include, but are not limited to: salad greens (year round via green housing), tomatoes (a primary crop), strawberries, sunflowers, peppers, eggplants, squash, potatoes, spinach, kale, onions, and cucumbers. It is anticipated that all crops will be irrigated using drip-tape and mulched to minimize water evaporation.

The annual quantity of water for appropriation was calculated using Crop Irrigation Requirement (CIR) data from the State of Washington Irrigation Guide (WAIG) 1985 and 1992. As noted above, crops planned for the property include: salad greens, tomatoes (a primary crop), strawberries, sunflowers, peppers, eggplants, squash, potatoes, spinach, kale, onions, and cucumbers.

Of the above crops that are included in the WAIG, dry onion has the highest CIR of 14.87 inches of water at Bremerton (WAIG, Appendix A, p 21). Assessing the water needed if the full 8 acres were planted with this crop, even though the applicant has identified this is an unlikely scenario, provides with an estimated upper limit of water demand by the project.

However the CIR formula does not take into account the loss in conveyance from seepage, evaporation and surface runoff. Consequently, irrigation efficiency percentages were used from Ecology Water Resources Guidance 1210. Subsurface (i.e. covered in mulch) drip tape systems, such as the one planned for this property, are assumed to have an average efficiency of 90%. Adjusting the CIR by the efficiency, the Total Irrigation Requirement (TIR) for the 8 acres of farm land was calculated, as shown below:

TIR = acres x CIR x / EFF%

Where:

TIR	= total irrigation requirement (acre-feet per year)
Acres	= irrigated crop area (acres)
CIR	= crop irrigation requirement (feet of water)
EFF%	= irrigation system application efficiency

The CIR for dry onion is 1.24 feet (14.87 inches).

So, the TIR for 8 acres of farm land, all watered using mulched drip tape irrigation system, is:

TIR = (8 acres of farm x CIR of 1.24 / 90% efficiency)

(8 x 1.24 / 0.9) = 11.02

TIR = 11.02 acre-feet

Therefore, an annual volume of 11 acre-feet is considered appropriate for the applicants stated use during the irrigation season (April to September).

That applicant expects to use greenhouses to produce some crops year-round and to grow seedlings prior to transplanting to the fields. The water requirements of the greenhouse crops is unknown at this

time but is significantly less than the full acreage need defined above. Given the size of the current operation and the operational information provided by the applicant, it is assumed that operation of the greenhouse will require 5,000 gpd or less. The applicant is not interested in dedicating the existing permit-exempt well to this use, so assuming a maximum use of 5,000 gpd over the 150 days of the non-irrigation season, we calculate an additional water requirement of 2.3 acre feet. This brings the full water allocation to a total of 13.3 acre-feet per year.

Hydrogeologic Setting

The USGS created conceptual and numerical models of the hydrogeology of Bainbridge Island as documented in their report Conceptual Model and Numerical Simulation of the Groundwater-Flow System of Bainbridge Island, Washington (Frans and others, 2011). This report describes ten hydrostratigraphic units. They determined top and bottom elevations for the units based on more than 400 well logs, including a number in the area surrounding the proposed point of withdrawal for this water right. The USGS provided us with a spreadsheet giving location, elevation, and other information for the wells used in their study. We reviewed 45 water well logs from the Department of Ecology for the section surrounding the Middlefield Farm area. Twenty-three of these logs were used by the USGS, and they provided copies of these 23 logs to us indicating their hydrogeologic unit picks on each.

The hydrogeologic units pertinent to this report of examination are the Vashon till confining unit (Qvt), the Vashon advance aquifer (Qva), the upper confining unit (QC1), and the sea-level aquifer (QA1).

The Qvt forms a confining layer present at the surface at the location of the Middlefield Farm well. The layer is mapped as having a thickness of over 150 feet in the vicinity of the farm but only some of the well logs reviewed seem to support this. Others in the vicinity show thicknesses of 120 feet or less, with typically thicknesses of about 80 feet.

The uppermost aquifer in the area is the Qva, which is underneath the Qvt. However, Frans and others (2011) map the aquifer as missing at the location of Middlefield Farm (although the property is close to the mapped contact). Based on site elevation (approximately 90 feet above MSL as determined by five-foot contour mapping from the City of Bainbridge Island), the existing well on the property is likely completed in the Qva deposits. However, based on the USGS mapping, it is likely the Qva pinches out near the Middlefield Farm property.

A map of Qva water levels from August 2007 (Frans and others 2011) shows that, in the vicinity of the Middlefield Farm location, the water levels in the Qva are about 50 feet above sea level (msl). It also shows a northwest-southeast trending divide roughly along the line between the west end of Eagle Harbor and the east end of Fletcher Bay. Frans and others (2011) state that where the aquifer intersects the land surface, groundwater from the Qva discharges to surface-water bodies. Therefore, it is very likely that some discharge from the Qva occurs south and west of the farm location into small streams draining to Eagle Harbor. The USGS report also notes that the vertical flow gradient in the Qva is generally downward in interior areas.

The upper confining unit, QC1, is a thick, laterally extensive, low-permeability unit present over most of the Island (Frans and others, 2011). It is expressed on nearby well logs as various mixtures or layers of clay, gravelly clay, silty sand, or silty sand and gravel. Thicknesses typically range from 10 to 100 feet,

except at a small portion near the shoreline of Eagle Harbor around the south end of Weaver Road where it appears to be absent. Thicknesses appear to increase to the north and west of Eagle Harbor.

The sea-level aquifer (QA1) is present across the whole Island, except for the southern portion around Port Blakely, where bedrock has been uplifted (Frans and others, 2011). This system is the primary source aquifer for most local wells, including the City's Weaver Road and Head of the Bay wellfields. Flowing conditions are present at both city wellfields. In the vicinity of the applicant's property, water in the QA1 aquifer ultimately discharges to Eagle Harbor via upward leakage through the overlying QC1 layer.

Hydraulic Properties

Frans and others (2011) list the median hydraulic conductivity for the QA1 as 22 feet/day based on records from 159 wells across the island. They give a median hydraulic conductivity for all the confining layers combined of 4.9 feet/day based on data from three wells. They state that these values are biased toward higher values, especially for the confining layers, because of the nature of the statistical sample of inventoried wells. In their calibrated, numerical model, the median horizontal conductivities for the QC1 and QA1 pilot points are 1.28 and 6.19 feet/day respectively. The median vertical conductivities for the two units' pilot points are 0.010 and 0.045 feet/day. The median storage coefficients for the two units' pilot points are 2.8×10^{-5} and 3.5×10^{-6}.

The well test performed on the existing well suggests it is an inefficient well or the aquifer has a low hydraulic conductivity (or both). Most of the available drawdown is used in the first 30 minutes of pumping, and the well could only sustain a rate of about five gpm. The lack of production potential from this well may also stem from the Qva likely pinching out near the well. The existing well cannot support the proposed Qi withdrawal of 90 gpm, and it is unlikely that re-configuring the well without additional drilling would improve its performance. Therefore, a new well is proposed. This new well will likely need to tap the QA1 to meet the requested flow rate.

Other Rights Appurtenant to the Place of Use

Two water right claims are related to the property. Claim 035726, filed September 21, 1973, describes a hand-dug well used for domestic proposes since 1915 at rates of 5 gpm and 1 acre-foot per year. Claim 035727, also filed September 21, 1973, describes a well used for domestic proposes since 1948 at rates of 5 gpm and 1 acre-foot per year. This possibly describes the existing well on the property.

Water Availability

For water to be available for appropriation, it must be both physically and legally available.

Physical availability

For water to be physically available for appropriation there must be ground or surface water present in quantities and quality and on a sufficiently frequent basis to provide a reasonably reliable source for the requested beneficial use or uses.

The USGS model identifies little or no change in water levels of the QA1 aquifer at this location between 2008 levels and modeled pre-development conditions (Frans and others 2011). Model results imply this location is relatively resilient to changes in regional water budget within the QA1 aquifer; experiencing

declines of 5 or less feet under the maximum impact scenario for 2035 conditions. Based on these model results, it appears that water is physically available from the QA1 aquifer.

Legal availability

To determine whether water to be legally available for appropriation, the following factors are considered:

- Regional water management plans – which may specifically close certain water bodies to further appropriation.
- Fisheries and other instream uses (e.g., recreation and navigation). Instream needs, including instream and base flows set by regulation. Water is not available for out of stream uses where further reducing the flow level of surface water would be detrimental to existing fishery resources.

While there are two small stream courses near to the project site, neither is included in WAC 173-515. Both streams drain to Eagle Harbor. No instream flows or WDFW-identified uses have been identified that would be impacted by the proposed use. As noted above, water in the QA1 aquifer discharges to Eagle Harbor via upward leakage through the overlying QC1 layer. The requested production, if from the QA1 or a deeper aquifer, will have little to no impact on the two small stream courses. Consequently, the water appears to be legally available.

Impairment Considerations

Impairment is an adverse impact on the physical availability of water for a beneficial use that is entitled to protection. A water right application may not be approved if it would:

- Result in impairment of a senior water right. Impairment is an adverse impact on the physical availability of water for a beneficial use that is entitled to protection.
- Interrupt or interfere with the flow of water allocated by rule, water rights, or court decree to instream flows.
- Degrade the water quality of the source to the point that the water is unsuitable for beneficial use by existing users (e.g., via sea water intrusion).

Using data collected by Robinson Noble from the City of Bainbridge Island Wells 4, 5, 6 and 1R constructed at the Head of the Bay wellfield, the QA1 aquifer has a local transmissivity value of between 6,000 and 15,000 gpd/ft and a storativity value of 0.005 (dimensionless). The average transmissivity at the wellfield is about 10,880 gpd/ft. The aquifer at Weaver Road wells, which are nearer to the applicant's property, have a considerably lower transmissivity, with values around 1,000 gpd or less.

Using the above aquifer parameters, we estimated the possible drawdown effects at distance from the pumping well using a simple spreadsheet model using the Theis and Cooper-Jacob equations. We then identified 33 wells within Section 27 based on available Department of Ecology Water Well Reports. We assessed the implied drawdown at the four closest wells completed in QA1 along with the City of Bainbridge Island production wells at the Head of the Bay wellfield to determine if the implied drawdown at each would represent an impact or impairment of that neighboring user. This well selection provides representative impacts for distances of up to 2,000 feet. Calculations were also made for distances of ½- and 1 mile.

Assuming a maximum production rate of the requested 90 gpm and a full day of production (likely an over-estimation as full-time irrigation is uncommon for the crops identified), the distance-drawdown relationships identify drawdown ranging from about 16 feet at the pumping well to less than one foot at the City's Head of the Bay Wells 2,000 feet away. Of the neighboring wells investigated, none appear to be impacted to a degree that would impair their associated water rights.

Only 2.8 feet of drawdown is implied at the City's Weaver Road wells 600 feet to the south. This level of water level change is a good proxy for any immediately neighboring domestic wells completed in the same aquifer system. Water levels in the QA1 aquifer are typically high (shallow compared to land surface), allowing for adequate reserve water even in the case of inefficient domestic wells.

Saltwater Intrusion

Along the west end of Eagle Harbor, the QA1 aquifer exhibits flowing conditions in most wells. Based on water level elevations, it appears that discharges from this aquifer occur indirectly to saltwater via upward flow through the QC1 confining unit into Eagle Harbor. Direct discharge to saltwater from the QA1 aquifer may also occur offshore of the island to the east, but this is over two miles distant from the well site. The proposed withdrawal will not lower aquifer water levels to the degree that saltwater intrusion is likely to occur. The USGS regional-level modeling did not find that saltwater intrusion was likely to become problematic, even under the maximum impact scenario of future conditions (Frans and others, 2011).

Beneficial Use

The proposed use of water is defined in statute as a beneficial use (RCW 90.54.020(1)).

Public Interest Considerations

RCW 90.03.290 requires that a proposed appropriation not be detrimental to the public interest.

RCW 90.54 (Water Resources Act of 1971) provides the most comprehensive list of legislative policies that guide the consolidation of public interest in the allocation of water. These policies generally require a balancing of the state's natural resources and values with the state's economic well-being. Specifically, the policies require allocation of water in a manner that preserves instream resources, protects the quality of water, provides adequate and safe supplies of water to serve public need, and makes water available to support the economic well-being of the state and its citizens.

Irrigation supply is considered a beneficial use in accordance with RCW 90.54.020. Further, the Family Farm Act, in RCW 90.66.030, states that it is in the public interest to provide irrigation of agricultural lands on family farms. As the proposed use of the water is for irrigation of lands considered as a family farm, the proposed use is in the public interest.

One of the goals of the Growth Management Act (RCW 36.70A) is to maintain and enhance agricultural industries and to encourage the conservation of productive agricultural lands. Further, according to the Bainbridge Island Comprehensive Plan, "preservation of prime agricultural lands and farms of local

significance are important goals of the residents of Bainbridge Island" and "the City [of Bainbridge Island] must use creative solutions to conserving existing farms and encouraging the creation of new farms." Additionally, one of the overriding principles of the plan is to preserve the special character of Bainbridge Island. Therefore, in line with both the Growth Management Act and the Bainbridge Island Comprehensive Plan, this water right is in the public interest.

Consideration of Protests and Comments
No protests were filed against this application.

Conclusions

In accordance with Chapter 90.03 RCW, I conclude that:

- The water is physically and legally available for appropriation,
- The water will serve a beneficial use,
- The diversion will not cause impairment of existing rights, and
- The proposed use is not detrimental to the public interest.

RECOMMENDATIONS

Based on the above investigation and conclusions, I recommend that this request for a water right be approved in the amounts and within the limitations listed below and subject to the provisions listed above.

Purpose of Use and Authorized Quantities

The amount of water recommended is a maximum limit and the water user may only use that amount of water within the specified limit that is reasonable and beneficial:

90 gpm
Agricultural Irrigation of 13.3 acre-feet per year total
11.0 acre-feet from April 1 to September 30
2.3 acre-feet from October 1 to March 30

Point of [Diversion Withdrawal]

SE¼, NW¼, Section 27, Township 25 North, Range 02 East W.M.

Place of Use

Middlefield Farm, Kitsap County parcel 272502-2-079-2006 (see legal description on page 2).

Report By: _____ Date: _____

Burt G. Clothier L.HG. – Robinson Noble

Reviewed By: _____ Date: _____

Douglas H. Wood L.HG. – Department of Ecology

If you need this publication in an alternate format, please call Water Resources Program at (360) 407-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341

Selected References

Elfendahl, G. 1996, *Streams of Bainbridge Island: Names History, Folklore & Culture,* prepared for the Bainbridge Historical Society, 54 p.

Frans, L.M., Bachmann, M.P., Sumioka, S.S. and Olsen, T.D., 2011, *Conceptual Model and Numerical Simulation of the Groundwater-Flow System of Bainbridge Island, Washington*: U.S. Geological Survey Scientific Investigations Report 2011-5021, 96 p., 1 plate

Haugerud, R.A. and Troost, K.G., 2011, *Geologic Map of the Suquamish 7.5' Quadrangle and Part of the Seattle North 7.5' x 15' Quadrangle, Kitsap County, Washington:* U.S. Geological Survey Scientific Investigations Map 3181, scale 1:24000

Kato & Warren, Robinson & Noble, Inc., 2000, *City of Bainbridge Island Level II Assessment*, prepared for the City of Bainbridge Island, 47 p., 69 figures

Robinson Noble, 1983, *Construction of the Bayhead Wells 4 & 5,* prepared for the City of Winslow, 5 p. 9 figures.

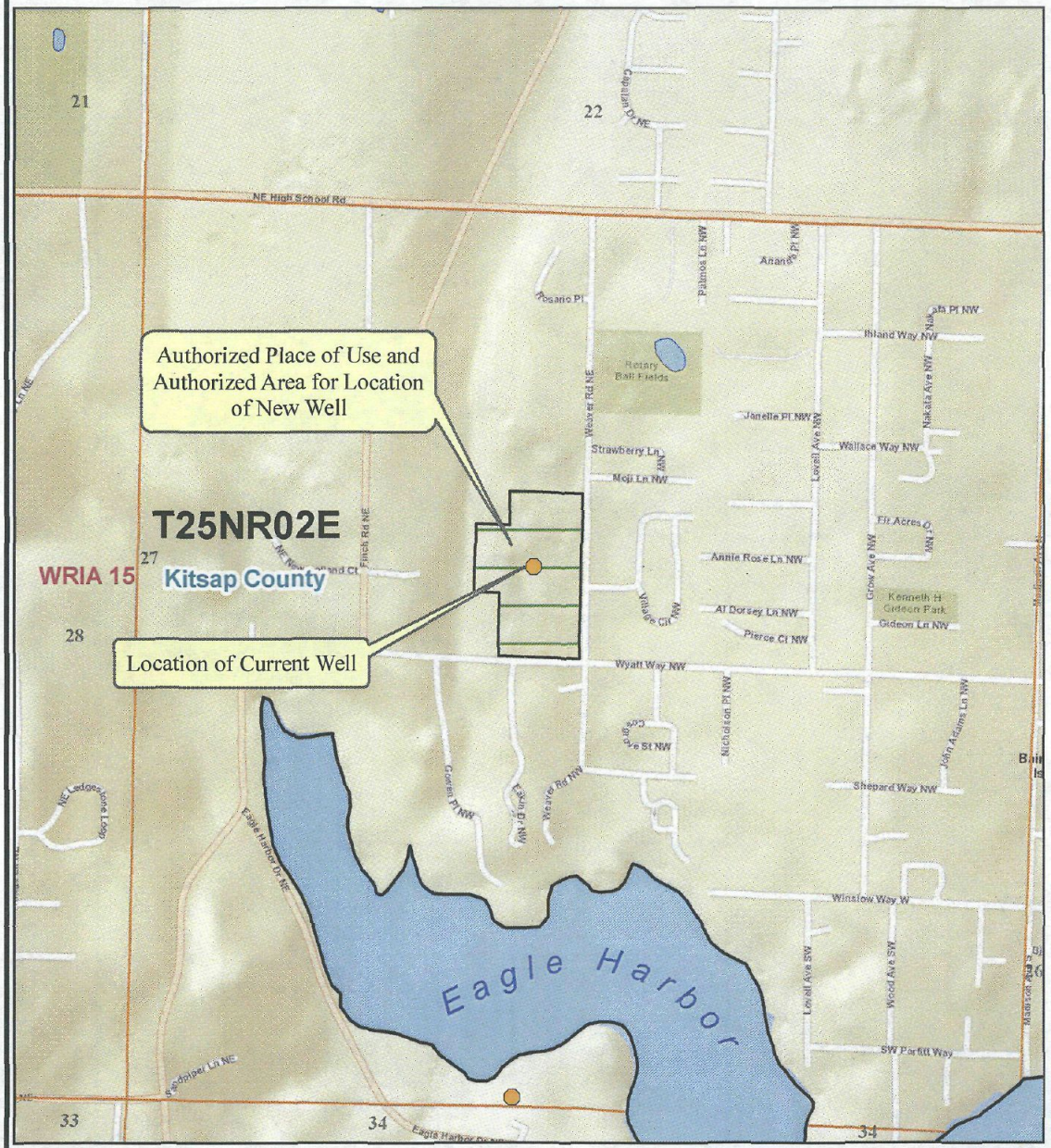
Robinson Noble, 1988, *Construction Report for the City of Winslow Bayhead Well 1A,* prepared for the City of Winslow, 7 p. 4 figures.

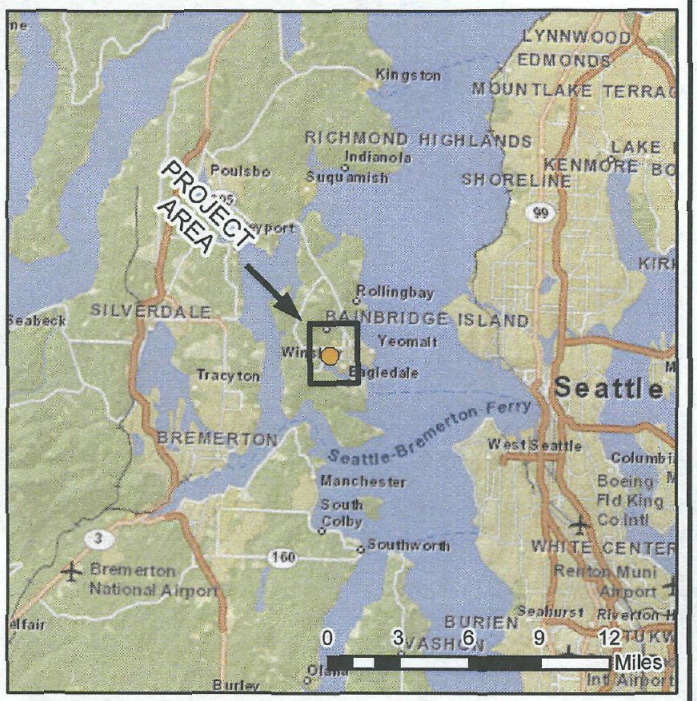
United States Department of Agriculture, 1997, Irrigation Guide, Part 652: Natural Resources Conservation Service, National Engineering Handbook 820 p. 2 appendices. http://www.wa.nrcs.usda.gov/technical/ENG/irrigation_guide/index.html

WSDOE Water Resources Program Policy 2010 (POL-2010), 2007, *Defining and Delineation of Water Sources*, 10p.

WSDOE Washington State Well Log Viewer
http://apps.ecy.wa.gov/welllog/

MiddleField LLC
Water Right Document Number G1-28736
Section 27 T25N R02E W.M.
WRIA15 - Kitsap County





Legend

- Authorized Place of Use
- Current Well Location
- County Boundary
- Townships
- Sections
- Water Body
- Parcels

0 250 500 1,000 1,500 2,000 Feet

DEPARTMENT OF ECOLOGY
State of Washington

Map Date: 8/20/2013

Place of use and point(s) of diversion/withdrawal are as defined on the cover sheet under the headings,'LOCATION OF DIVERSION/WITHDRAWAL'and 'LEGALDESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED.'

ATTACHMENT 1